only the differential circumferential speed between the screen roller 5 and the roller 19 is additionally coupled by a comparatively small motor. A third alternative is to install an adjustable mechanical gear transmission. Further constructions for realizing a circumferential speed difference between the screen roller 7 and the roller 19 are possible.

In the exemplary embodiment illustrated in FIG. 1, therefore, the screen roller 7 is equipped with an individual drive. Furthermore, a speed transmitter 31 arranged on the blanket cylinder 25 is provided, which communicates the then-current printing/machine speed via a signal line 33 to a diagrammatically illustrated control device 35. Alternatively, the signal for the then-current printing/machine speed may also come directly from a non-illustrated main drive motor of the printing machine 1 and from the printing unit 3, respectively.

The control device 35 stores a characteristic curve, also known as a run-up curve, which stipulates the necessary circumferential speed difference between the screen roller 7 and the roller 19 as a function of the then-current printing speed (V_M) at which the printed/optical ink density remains constant. The appertaining slip of the screen roller 7 is therefore retrieved from the characteristic curve, and then the corrected speed (V_7) for the drive of the screen roller 7, i.e., the motor drive 29 connected to the control device 35 via a signal line 37, is stipulated or prescribed.

FIG. 2 is a plot diagram or graph, wherein, as a percentage, the printing/machine speed v is plotted on the abscissa axis and the slip s, i.e., the circumferential speed difference between the screen roller 7 and the succeeding or following roller 19 is plotted on the ordinate axis. In the graph, a curve 39 is depicted, which indicates, for each printing speed, the required circumferential speed difference between the screen roller 7 and the roller 19, so that the optical density of the ink to be transferred between the rollers 7 and 19, and of the printing image printed onto the print carrier, respectively, is preferably constant, but is at least approximately constant within the framework of a narrow tolerance.

It is apparent that the slip s is relatively high at a low printing speed v, and decreases with a rising printing speed v, until it finally approaches zero and is zero, respectively, at a standard printing speed v_n. The standard printing speed is the speed at which the printing machine mainly operates. Even in the event of a further increase in the printing speed to the maximum printing speed v_{max}, the slip s remains unchanged at zero. When the circumferential speed difference between the screen roller 5 and the roller 19 is controlled along the characteristic curve 39, which may readily be performed with the aid of the control device 35, a constant optical ink density is realizable in the range between the minimum printing speed and the standard printing speed v_n.

FIG. 3 shows a graph wherein the printing/machine speed v is plotted on the abscissa axis, and the optical density D_v of the ink to be transferred from the screen roller 7 onto the roller 19 is plotted on the ordinate axis. An unbroken line 41 represents the profile of the optical density, such as occurs when the slip between the rollers 7 and 19 is regulated or controlled in a way described with reference to FIG. 2. It becomes clear that the optical density is constant up to the standard printing speed v_n and falls a little in the speed range lying thereabove, up to the maximum printing speed v_{max}. The reason for this is that the slip s remains zero even for printing speeds higher than the standard printing speed. The comparison, a broken line 43, represents the profile of the optical density against the printing speed v if slip regulation were not carried out, i.e., if the slip s were, for example, zero at every printing speed; the optical density D_v decreases continuously with an increasing printing speed v.

As is apparent from FIG. 3, the ink density level achieved by the circumferential speed difference controller according to the invention is below that when slip regulation, such as is described with reference to FIG. 2, is not carried out. By an increase in the temperature of the screen roller 7, however, it is possible to raise the optical density continuously again, as indicated by the broken line 41'. Of course, it is also possible, by reducing the screen-roller temperature, to lower the optical density D_v continuously, as indicated by the broken line 41".

All the varying modes of the method have in common the fact that the slip s, i.e., the circumferential speed difference between the screen roller 7 and the ink applicator roller 19, is stipulated or prescribed by the characteristic curve 39 for each printing speed v, so that the optical density D_v is constant at all printing speeds v lower than the standard printing speed v_n. Insofar as the characteristic curve 39 is stored in the control device 35, action by the operating personnel in order to set the required circumferential speed difference, respectively, is preferably not required, at most, for manual fine setting.

We claim:

1. A method for controlling a quantity of medium transferable from a screen roller of a printing machine onto a roller that is in contact with the screen roller, which comprises exerting an influence upon a difference in circumferential speed between the screen roller and the roller in contact therewith, and further comprises controlling the difference in the circumferential speed as a function of the printing speed of the printing machine, so that printed medium density remains at least approximately constant at least within a wide printing speed range.

2. The method according to claim 1, wherein the medium controlled thereby is a medium selected from the group thereof consisting of ink and varnish.

3. The method according to claim 1, wherein the difference in circumferential speed is zero at a standard printing speed.

4. The method according to claim 1, wherein the difference in circumferential speed is zero at a printing speed higher than a standard printing speed.

5. The method according to claim 1, which further comprises determining, for the difference in the circumferential speed dependent upon the printing speed, a characteristic curve at which the printed medium density remains constant.

6. The method according to claim 3, which further comprises storing the characteristic curve in a control device.

7. The method according to claim 1, which further comprises controlling the difference in the circumferential speed as a function of a circumferential speed of a cylinder selected from the group thereof consisting of a printing-form cylinder and a blanket cylinder capable of being supplied with the medium by the screen roller.

8. The method according to claim 1, which further comprises increasing the temperature of the screen roller so as to raise the printed medium density.

9. The method according to claim 1, which further comprises lowering the temperature of the screen roller so as to reduce the printed medium density.

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